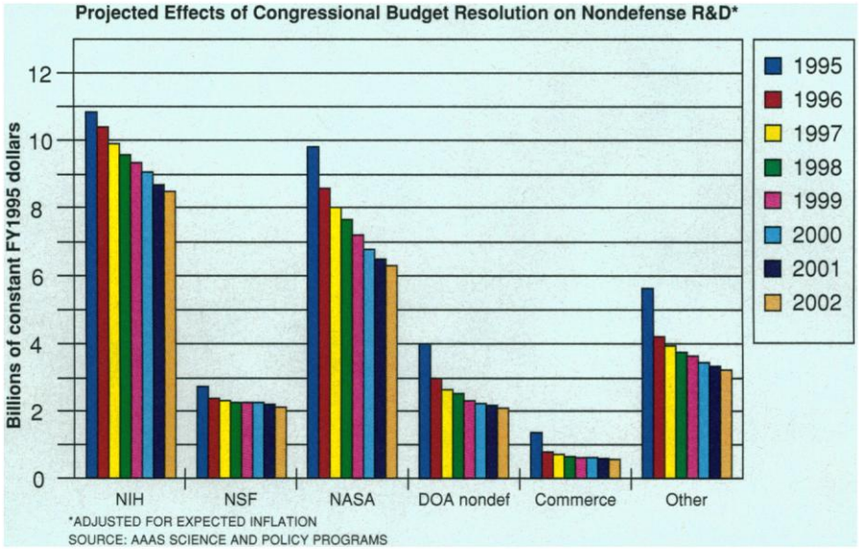
edited by DIANA PABST

Appeal for Unified Action by AAAS Affiliates: "Circle the Wagons and Shoot Outward"

At the first meeting of AAAS affiliates in more than a decade, scientists and engineers learned that when it comes to fending off massive cuts in federal science spending, they may have themselves—as much as Congress—to worry about.

More than 90 of the 285 affiliated science and technology organizations of AAAS sent representatives to the day-long meeting, held in Washington, D.C., on 26 June. They came in response to an initiative by AAAS President Rita Colwell. According to AAAS analyses of current budgetary trends, by the year 2002—when House and Senate plans call for a balanced budget— federal funds for nondefense research and development (R&D) will have dropped by nearly 34% in constant dollars (see graph).



White House science adviser John H. Gibbons, one of the featured speakers at the meeting, noted that "under these projected cuts, we would sink far below other industrialized nations in the percentage of our gross domestic product invested in research and development."

Joining Gibbons as speakers at the meeting were Colwell; Neal Lane, director of the National Science Foundation; Arati Prabhakar, director of the National Institute of Standards and Technology; David D. Clement, chief of staff for the House Committee on Science; and William G. Wells Jr., professor of management science at George Washington University and author of *Working With Congress: A Practical Guide for Scientists and Engineers* (AAAS Press).

As several of the speakers noted, AAAS affiliates span a wide range of disciplines and comprise more than 7 million members—a potentially formidable lobbying bloc for science and technology. And indeed, affiliates ranging from the American Chemical Society to the American Psychological Association have begun or boosted their efforts at swinging congressional favor their way.

But, as Howard Silver, executive director of the Consortium of Social Science Associations, said: "It's as if a thousand grenades are being lobbed from every direction and each of us is scrambling to defuse those that land closest." The AAAS affiliate meeting was aimed at building a more unified response.

The last time AAAS affiliate leaders gathered, in the mid-1980s, also was in response to federal budgetary threats. But, said Colwell, "yesterday's problems seem trivial compared to today," when congressional budget cutters "aren't differentiating between short-term consumption spending and funds aimed at long-term investment for the good of the nation's future."

Lane told the affiliates that while "we have entered a stage of pervasive reductions, and R&D will not be exempted ... unique and valuable components of the enterprise are being targeted for elimination, often by those with no experience in how the enterprise as a whole functions."

Even Clement, who described

Statement Issued by the Board

At its 23–24 June 1995 meeting, the AAAS Board of Directors discussed the current policy climate for federal support of research and education and the potential impacts of proposed reductions on the economy, health, and the environment. The Board recognizes the seriousness of the federal budget situation and supports efforts to reduce the deficit and balance the budget.

The Board is gratified to see that, despite the severe constraints imposed by deficit reduction efforts, federal funding for basic research continues to enjoy strong bipartisan support in Congress and the Administration. It is particularly pleased by the acknowledgement by congressional leaders of the key role played by science and technology in improving the nation's economy and quality of life.

Nevertheless, the Board expressed strong concern over the future implications of budgetary trends contained in the current legislation. AAAS analyses suggest, for example, that under the version of the budget resolution passed by the House, expenditures for nondefense R&D in constant (inflation-adjusted) dollars would drop an estimated 34% from fiscal year 1995 to 2002. Even the relatively protected National Science Foundation budget for R&D would lose more than 20% during this period.

The Board urges Congress to exercise great caution in making changes of this magnitude and consequence for the nation's vital research enterprise. It further encourages the research comunity to make known its concerns, and to do so with an appreciation of the fundamental unity of the research and education enterprise and an understanding of the importance of congressional concerns about the federal budget.

—Adopted on 24 June 1995

the House Science Committee as seeking to spare real science versus "boondoggle" science, acknowledged that outreach to congressional members was imperative. Because more than half of Congress consists of relative newcomers elected to their first or second terms, "they need education," Clement said. "For many of them, science is something they can't see, they don't use themselves, and they don't understand."

Another point of agreement among the speakers was that, despite their pervasiveness in American life, science and technology lack a "natural constituency" that is visible to Members of Congress in the same way as, for example, the elderly or military veterans. "It's extremely difficult to get 218 votes for science in the House," Clement said. "Science barely rises above the background clutter in the various bills."

"We must be careful not to give in to our individual instincts to save ourselves at the cost of others."

—Neal Lane

Part of the problem, Lane said, is that "this lack of understanding for the [R&D] enterprise as a coherent whole is not reserved only to those outside the R&D structure. One hears comments like 'Let them cut astronomy as long as they don't touch biology' or 'Let the technology programs go down; it's university research that matters.'

"We must be careful," he said, "not to give in to our individual instincts to save ourselves at the cost of others."

One affiliate representative drew rueful laughter from the audience when he asked Lane: "Isn't it a conflict to ask us to speak out about the importance of research and development, but not to shoot at each other in the process?"

"Fundamentally, I agree," Lane responded. "But individual fields of science have been able to set priorities. Surely we can offer Congress at least some agreed-upon criteria by which budget decisions could be made."

Wells urged the affiliates to build a coherent alliance among themselves, and with Members of Congress and state governments.

Specifically, Wells suggested that the affiliates take concrete steps to organize a nonpartisan National Coalition for Science and Engineering by early 1996, based on the principle that "science works for society, and society in turn depends on and nurtures science."

He also suggested that the affiliates' Washington representatives meet regularly to discuss collaborative actions; that affiliates collectively and systematically "share intelligence on alliance building in Congress"; and that they expand their Congressional Science and Engineering Fellow programs. "If ever ... such individuals could potentially help make a difference, it would be now," he said.

Comments from affiliate leaders after each speaker and during the afternoon's break-out sessions, however, revealed just how much of a challenge it will be to coordinate the views and actions of such a diverse and independent-minded set of communities. In addition to problems of logistics, leaders described their affiliates as including many members who see political activity as "inappropriate" for groups devoted to the pursuit of scientific knowledge. At best, some said, such work is often deemed "unfamiliar" or "distracting."

Nonetheless, by the end of the day affiliates had rallied

To get involved . . .

For questions or ideas about follow-up, contact the AAAS Executive Office at 202-326-6639. Also, for updated information, including the latest data on congressional appropriations for R&D, check under Science & Policy at the AAAS Web site (http://www.aaas.org).

Consensus Statement of the Assembly of AAAS Affiliates

The Assembly of Affiliates of the American Association for the Advancement of Science met in Washington on 26 June 1995, to discuss the impact of reduced federal support of research on the economy of the United States and the health, well-being, and quality of life of all Americans. The affiliates represent 285 scientific and engineering societies with over 7 million members.*

The assembly recognized and applauded the necessary effort to reduce the federal budget deficit. It was also encouraged by the bipartisan recognition by congressional leaders and the Administration of the vital roles played by science, technology, and education in American life and their importance for the welfare of the country. The assembly voiced strong concern, however, that current proposals to reduce funding of nondefense research and development by 34% (in constant dollars) between 1995 and 2002 will inadvertently do great harm to the American effort in science, engineering, and education.

Advances made by American scientists and engineers have vastly improved the quality of life, the health, and the standard of living of all Americans. These advances are continuing and are as needed today as they have ever been in the past. Competition between nations has become economic, and America's advantage is in the superiority of its science, technology, and education. The ability of American researchers to remain productive is also critical for defending the health of every American. New diseases are emerging; the prevalence of others is increasing as the population ages; and old remedies are losing their effectiveness. The assembly thus voiced its fear that the removal of critical federal support from scientific and engineering research risks jeopardizing the future competitiveness of the American economy, as well as the health of the nation's citizens.

Cutting the federal budget deficit now is a wise move to protect future generations from the burden of excessive debt. However, if deficit reduction causes vital investments in research and education not to be made, then future generations will face a new and even more onerous debt—a gap in science and technology that will be very difficult to make up. Federal support of science, engineering, and education at a level adequate to sustain these endeavors is thus indispensable to the future of America.

**Eighty-three affiliated organizations were represented at the assembly. This statement represents the consensus of the participating representatives. It has not been formally reviewed or approved by the governing bodies of the respective organizations.*

around a number of ideas, including the following:

The drafting and signing of a "Consensus Statement" that could be sent to Congress and state governments in support of science and technology funding;

Periodic meetings, organized by AAAS, to address shared concerns and coordinate activities;

Outreach to Members of Congress, especially in their home districts (see sidebar at right);

Use of the AAAS World Wide Web site (http://www.aaas.org) to continue these discussions and share information.

All AAAS affiliates received a copy of the meeting report and were urged to submit their comments and ideas. Remember, Colwell said, "we've got to shoot outward from our circle of wagons rather than inward at each other."

–Cynthia Lollar

Building Alliances with Congress

The AAAS guide to Capitol Hill, *Working With Congress: A Practical Guide for Scientists and Engineers*, by William G. Wells Jr., includes 17 cardinal rules for approaching Members of Congress. Among them are:

- Convey that you understand something about Congress, particularly time and constituency pressures.
- Demonstrate your grasp of the fundamentals of the Congressional decision-making system, especially the need for compromises and trade offs.
- Don't seek support of science as an entitlement.
- Perform good intelligence-gathering in advance, learning the basics about the Member, committee, or staff member you are contacting.
- Focus your problem or issue clearly, and make apparent what decision is needed or what action Congress should take.
- Remember that Members and their staffs are largely generalists; keep messages simple and jargon-free.
- Use time—yours and theirs—effectively.
- Don't patronize Members or staff. Remember that most of them are intelligent, hard working, and dedicated to public service.
- Remember your friends and thank them often.

Working With Congress *is available from AAAS distribution center (1-800-222-7809) for $12.95 ($10.35 for AAAS members) plus $4 shipping.*

New Dues Rates Set for 1996

The AAAS Board of Directors approved a dues increase for 1996. The Board authorizes increases to cover two kinds of expenses: unavoidable costs associated with running AAAS and publishing *Science*, and new expenses that add value to membership. The Association and *Science* have been dealing with a sharp and continuing increase in the price of paper. Paper costs have risen 31% in the last year and are expected to increase another 20% for 1996. In addition, the Board considered the continuing rise in nonprofit postage rates and an increase in costs for membership database management.

Dues were increased across all major categories. The last dues increase for students was in 1994. Membership categories that do not include a subscription to *Science* have not had a dues increase since 1992. *Science* subscription prices for libraries and institutions were also increased, and a special discounted price was established for high school and public libraries.

The new rates, effective for membership or subscription terms beginning after 31 December 1995, are:

Regular members: $102
Postdocs and K-12 teachers: $77
Emeritus members who receive *Science*: $58
Students: $55
Patrons: $250
Corporate: $1000
Spouses and supporting and emeritus members who do not receive *Science*: $38
Libraries and institutions: $250
High school and public libraries: $230

Members whose membership term expires during 1996 will be advised of the new rates on their renewal notices. International members will also be advised of 1996 postal rates for delivery of *Science*.

Member dues and voluntary contributions form the critical financial base for a wide range of AAAS activities. For more information, call the AAAS Membership Office at 202-326-6417.

Accuracy Check

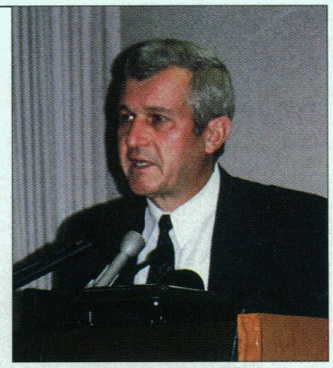
The AAAS Science Journalism Awards program, sponsored by The Whitaker Foundation, is seeking volunteers to review radio and television entries for scientific accuracy. Participants must be available in the Washington, D.C., area sometime in September. For more information, contact Ellen Cooper. Phone: 202-326-6431. E-mail: ecooper@aaas. org.

Wide Web Response

The AAAS World Wide Web server can now be accessed at: **http://www.aaas.org.**

In the week after AAAS went on-line with its Web server last month, there were 36,736 "hits," which included access by people in 31 countries.The top-requested files included the AAAS home page; JobNet; the *Science* home page; the table of contents for *Science*; and the home page of the Directorate for Education and Human Resources.

For information about the AAAS Web site, contact Clift Martin at: cmartin@aaas.org. Or: webmaster@aaas.org.



DIANA PABST

Valeriy Shmarov

Security in Ukraine

As Ukraine struggles to define and strengthen its role in international security, it faces a lack of "tools and expertise" to address related scientific and political issues, the country's defense minister, Valeriy Shmarov, said this month at AAAS.

"The political and international environment around Ukraine has significantly changed the concept of security," he told an assembly of security analysts, journalists, and AAAS staff. But the transition is difficult because "in the Soviet Union, Ukraine didn't have to formulate national and international security directions."

Among his remarks, Shmarov called for cooperation with other countries to promote scientific advancement and share technical expertise.

At the briefing were 12 analysts from Belarus, Kazakhstan, Russia, and Ukraine. They were participating in a 2-week orientation—sponsored by the Program on Science and International Security—on how the United States makes and implements arms control and nonproliferation policy.

The orientation program, in its second year, is an outgrowth of defense and security policy workshops and conferences AAAS has organized in the newly independent states since 1992. Last month, workshops were held in Ukraine and Latvia on strengthening export controls on the flow of materials that could be used in the production of weapons of mass destruction.

AAAS Pacific Division Meets in British Columbia

VANCOUVER, B.C.—The Pacific Division held its 76th annual meeting here last month at the University of British Columbia (UBC). More than 400 attendees followed a packed program of 249 technical papers and a host of lectures, field trips, poster presentations, and social events. An awards ceremony recognized outstanding research presentations by graduate students. Symposia, workshops, and contributed paper sessions focused on forestry practices and soil conditions, ecosystem management, the paleoenvironment of the Pacific Northwest, species risks, health care and human rights, land-use planning in the Fraser River delta, and community involvement in environmental decision-making. A sample follows.

Earthquake Response

Vancouver is one of the fastest growing cities in North America and lies in an earthquake-prone region. But models used to assess earthquake response in Greater Vancouver are out of date and don't adequately reflect the impacts that could occur, say scientists from the Geological Survey of Canada.

John Luternauer, Jamie Harris, and David Mosher described new findings on the subsurface geology of the highly industrialized and urbanized Fraser River delta, just south of Vancouver.

Major facilities located in the delta include an international airport, the busiest ferry terminal in the world, the largest coal-shipping facility in North America, a four-lane highway tunnel under the Fraser River, and ocean-floor cables that supply electricity and communication to Vancouver Island.

Onshore and offshore research, Luternauer said, indicates the delta's geology "is far more complex than assumed in current geotechnical models used to assess earthquake response." The delta's foundation materials, Mosher pointed out, are similar to those that failed in the recent earthquakes in Kobe, Japan; Northridge, California; and Mexico City.

The team said liquefaction, ground motion amplification, and submarine slope failures could occur during a large earthquake, resulting in extensive damage to facilities of major importance to the region. They cautioned that future modeling of earthquake response in the delta should take the findings into account for land-use planning.

While earthquakes have not damaged Vancouver in historical times, Luternauer said historical and geological data indicate the region could experience an offshore interplate earthquake greater than magnitude 8.0.

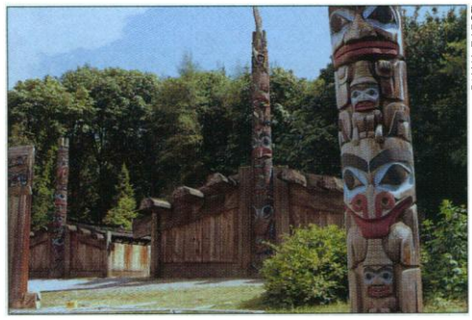
"Biotic Conveyor Belt"

Cargo ships that ply world ports are leaving behind unwelcome souvenirs: exotic and sometimes harmful organisms.

In a symposium on related risks in the Pacific Northwest, marine scientist Janet Kelly called for an alliance of British Columbia and neighboring U.S. coastal states to address the threat: "Scientists and policymakers need to work with shipping operators to manage this problem because we know now it's a real risk."

In 1991, Kelly studied ballast sediment from woodchip ships entering Tacoma and Port Angeles. She found a wide range of viable organisms, including dinoflagellates, one of which includes toxic species in its genus.

Kelly cited 40 non-native species introductions around the world attributed to ballast discharge. In the United States, the "wake-up call" was zebra mussel infestation of the Great Lakes in the 1980s. About the same time, toxic phytoplankton—transported by ships from Japan—were found in Australian waters, causing shutdowns of shellfish farms.



DIANA PABST

First Nations culture. Totem poles and Haida houses at UBC's Museum of Anthropology.

"Biological invasion is very complex. Each situation is so specific and unique we can't predict them. But every year we're learning more," said Kelly. One measure to reduce risk is managing ballast discharge in coastal waters.

As a model for regional cooperation, Kelly cited a multistate effort to protect the Chesapeake Bay from dangerous bio-invasions. In the Pacific Northwest, the shipping industry "has come around" to the problem, Kelly said. "They realize the need to resolve the issue without unduly restrictive legislation."

Ten years ago, biogeographer James Carlton called ballast water discharge "an international biotic conveyor belt." Kelly said: "Only recently, have we come to appreciate what an efficient conveyor belt it is."

Forest Management

Researchers from Oregon State University (OSU) and the USDA Forest Service have developed a new computer research tool to aid decisions about logging on federal lands in the Pacific Northwest. Called CASCADE, it simulates changes in landscape patterns in response to forest cutting and regrowth.

"There's widespread consensus we need to move from dispersed [staggered] cutting on short rotations," the pattern of timber harvesting in federal forests for the last 40 years, said David Wallin of OSU. "But there are many different ideas about what the alternative should be."

An approach being explored is use of the "range of natural variability" to guide design of alternatives. The rationale is that the potential for survival of native species is reduced if their environment is pushed outside the range of its natural variability; thus, managing an ecosystem within that range of conditions should result in habitat that can sustain viable populations of species.

An objection to dispersed cutting is it reduces interior forest tracts that many species—such as the spotted owl—require. As we aim to protect more and more species, however, broader habitat requirements are not fully understood.

That led to the idea of quantifying the range of forest conditions that existed before European settlement, and using them as a frame of reference against which future management scenarios can be compared. "The idea has been around for a while. We've come up with some innovative ways to analyze existing data to begin to quantify some of that natural variability," said Wallin, who collaborated with Fred Swanson of the Forest Service and Barbara Marks of OSU.

Wallin described how researchers used tree ring records to identify wildfire patterns in an Oregon forest and mapped landscape conditions in two large watersheds from the late 1400s to 1990. Analysis showed current conditions were outside the presettlement range of variability. CASCADE simulated the effects of five alternative future management scenarios. Wallin said the results showed that doing aggregated cutting on long (200+ years) rotations or a mixture of rotation lengths (100 to 300+ years) could restore the two areas to conditions "within or very near" the presettlement range of conditions.

–Diana Pabst